

# Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

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Vol. 48.

June, 1946.

No. 570.

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## NOTES ON AQUATIC AND PRAIRIE VEGETATION IN SOUTHWESTERN MINNESOTA<sup>1</sup>

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During the course of plant collecting in Minnesota in 1945<sup>2</sup>, it occurred to us that a trip to the southwestern part of the state might yield some interesting plant records. Early in the season some plants of western distribution were found in temporary rock pools on Sioux Quartzite in Cottonwood County. Knowing of the presence of similar conditions in Rock County we traveled down to Luverne with high expectations of making some worthwhile discoveries.

A few miles north of Luverne in Mound Township the Sioux Quartzite forms a series of gently rounded hills higher than the surrounding countryside. The southern extremity of the rock is marked by a sheer rock wall. On the top the glacial drift is very thin. The rock is close to the surface and exposed in many places. Numerous pools were present in the early summer between the low rock ridges and in shallow depressions. They occur dispersed in a typical rocky prairie habitat. Later in the summer these pools usually become dry.

Probably the unusually wet spring and early summer were responsible for the rich aquatic flora encountered. Dormant seeds had perhaps germinated for the first time in several years, since the area had been visited several times in the past and

<sup>1</sup> Contributions from the Herbarium of the University of Minnesota I.

<sup>2</sup> The field work was supported in part by a grant in aid of research from the Graduate School of the University of Minnesota.

many of the plants present this year were not represented in the collections previously made.

The distribution of species in Minnesota is based on specimens in the Herbarium of the University of Minnesota and published reports. Distribution outside of the state is based on current manuals and special treatments. All specimens cited are in the Herbarium of the University of Minnesota. Unless otherwise indicated collections were made by the authors on July 8, 1945, in Rock County, Minnesota. The following list includes five species and two forms reported for the state for the first time and seven species that are very rare in the state.

Around a fairly large rock pool about three miles north of Luverne the following plants were found growing:

*ISOETES MELANOPODA* Gay ex Dur., 17557, in mud; 17559, in 2-4 inches of water at a similar pool about a quarter mile southwest of the large pool. These collections represent the first evidence of the occurrence of this species in Minnesota.

*SCHEDONNARDUS PANICULATUS* (Nutt.) Trel., 17556. This grass grew in the prairie at the edge of the rock pool. A single collection of the species is represented in the University of Minnesota Herbarium: Pipestone, Pipestone County, July, 1895, *M. Menzel*. *Schedonnardus* was reported for Minnesota by Upham<sup>1</sup> as *Schedonnardus texanus* Steud. (*Lepturus paniculatus* Nutt.) as occurring on "Rocky hills, Mound township, Rock county, Leiberg." The nearest known occurrence for this species is in South Dakota.

*HETERANTHERA LIMOSA* (Sw.) Willd., 17554. This blue-flowered species is another aquatic which has not previously been reported for Minnesota. The species has been reported from South Dakota.

*ELATINE TRIANDRA* Schkuhr f. *INTERMEDIA* Seubert, 17551. This form, new to Minnesota, is the aquatic phase which grows in shallow water. It has been reported from Wisconsin and South Dakota. The species, *Elatine triandra*, was reported by Sheldon<sup>2</sup> as having been collected in pools near Cannon river, Burnside Township, Goodhue County, Minnesota, by A. P. Anderson, August, 1893. We have not been able to locate specimens of this, but is it likely that they represent f. *intermedia* as they grew in shallow pools.

*CALLITRICHE HETEROPHYLLA* Pursh, 17552. Although reported for Minnesota by Muenscher<sup>3</sup>, this species was not pre-

<sup>1</sup> Upham, Warren, Catalogue of the Flora of Minnesota, p. 169, 1884.

<sup>2</sup> Sheldon, E. P., Minnesota Botanical Studies 1: 16, 1894.

<sup>3</sup> Muenscher, W. C., Aquatic Plants of the United States, p. 262, 1944.

viously represented from the state in the Herbarium. An additional collection with mature fruit was made later in the summer on October 19, 1945, *J. W. Moore & N. L. Huff*, 18431, in an intermittent creek at Mound Spring State Park, a short distance northeast of the rock pool under discussion.

*LIMOSELLA AQUATICA* L., 17548. One previous collection had been made in Minnesota: Pipestone, Pipestone County, June, 1895, *M. Menzel*.

*PLAGIOBOTRYS SCOPULORUM* (Greene) I. M. Johnston, 17553. The nearest known locality for this species is western South Dakota. Prior to this year it was not known to occur in Minnesota. Earlier in the season very young plants were obtained from a rock pool on a Sioux Quartzite outcrop in Delton Township, Cottonwood County, Minnesota, May 29, 1945, *J. W. Moore & J. W. Posz*, 16935.

*HORDEUM PUSILLUM* Nutt., 17550. This species is of rare occurrence in Minnesota. Upham<sup>1</sup> first reported the species from Blue Earth County as collected by Leiberg. Other collections from Minnesota are: Pipestone, Pipestone County, June, 1895, *Menzel* and May, 1932, *Fellows*; Brown County, July, 1938, *Rosendahl*, 6926.

The following species were associated with those listed above: *Koeleria cristata* (L.) Pers., 17561; *Carex Eleocharis* L. H. Bailey, 17564; *Juncus Dudleyi* Wiegand, 17562; *Allium canadense* L., 17566; *Delphinium virescens* Nutt., 17560; *Potentilla pennsylvanica* L. var. *strigosa* Pursh, 17565; *Linum sulcatum* Riddell, 17549; *Gratiola neglecta* Torr., 17555; *Verbena simplex* Lehm., 17558.

In a prairie pasture about four miles north-northwest of Luverne rock pool plants were again encountered; some were the same as those previously collected and some were additional ones. The water in some of these pools had evaporated leaving a moist layer of mud. Other pools still had an inch or two of water in them.

*MARSILEA VESTITA* Hook. and Grev., 17578. This was growing in some abundance at the margin of a pool. The only previous collection from Minnesota is: Pipestone, Pipestone County, September 15, 1938, *J. W. & M. F. Moore*, 10550.

*ISOETES MELANOPODA* Gay ex Dur., 17582.

*MYOSURUS MINIMUS* L., 17586. Previous collections are: Big Stone County, June, 1901, *Holzinger & Anderson*; Chippewa County, May, 1909, *Moyer*; Pipestone County, May, 1935, *Rosendahl et al.*, 3052.

<sup>1</sup> Upham, Warren. Catalogue of the Flora of Minnesota, p. 169, 1884.

TILLAEA AQUATICA L., 17584. This interesting little plant has escaped detection in Minnesota until now. According to the reported range for North America, our collection is a new record for both Minnesota and the Great Plains Region of the United States and Canada.

ELATINE TRIANDRA Schkuhr f. TERRESTRIS Seubert, 17585. The terrestrial form in drying mud is new to Minnesota.

HYDRANTHELIUM ROTUNDIFOLIUM (Michx.) Pennell, 17579. This species is also known from Lac qui Parle County where it was collected by Moyer and from Lyon County where it was collected by N. L. Huff.

LIMOSELLA AQUATICA L., 17581.

PLANTAGO ELONGATA Pursh, 17587. We are reporting this species from Minnesota for the first time, although there is one previous specimen preserved in the Herbarium: Pipestone, Pipestone County, June 15, 1931, *Fellows*.

The following species were collected at the same locality in the adjacent prairie: *Stipa spartea* Trin., 17574; *Hordeum jubatum* L., 17583; *Anemone canadensis* L., 17570; *Lepidium densiflorum* Schrad., 17571; *Rosa arkansana* Porter, 17572; *Scutellaria parvula* Michx., 17573; *Acerates lanuginosa* (Nutt.) Dcne., 17568; *Verbena simplex* Lehm., 17580; *Erigeron strigosus* Muhl. ex Willd., 17569; *Achillea lanulosa* Nutt., 17577.

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## NOTES ON THE COMPOSITAE OF THE NORTHEASTERN UNITED STATES

### III. INULEAE AND SENECEONEAE

ARTHUR CRONQUIST

My condensation of the Antennarias of the northeastern United States (RHODORA 47: 182-184. 1945) has been criticized at some length by Fernald (RHODORA 47: 221-235; 239-247. 1945). At the root of the trouble in *Antennaria* is the problem of apomixis. Some workers, especially those in Europe, have contended that each apomict should be treated as a distinct species, since it is self-perpetuating, and can, at least theoretically, be differentiated from all other apomicts by morphological minutiae. There are three noteworthy objections to such a pro-